FIG. 1

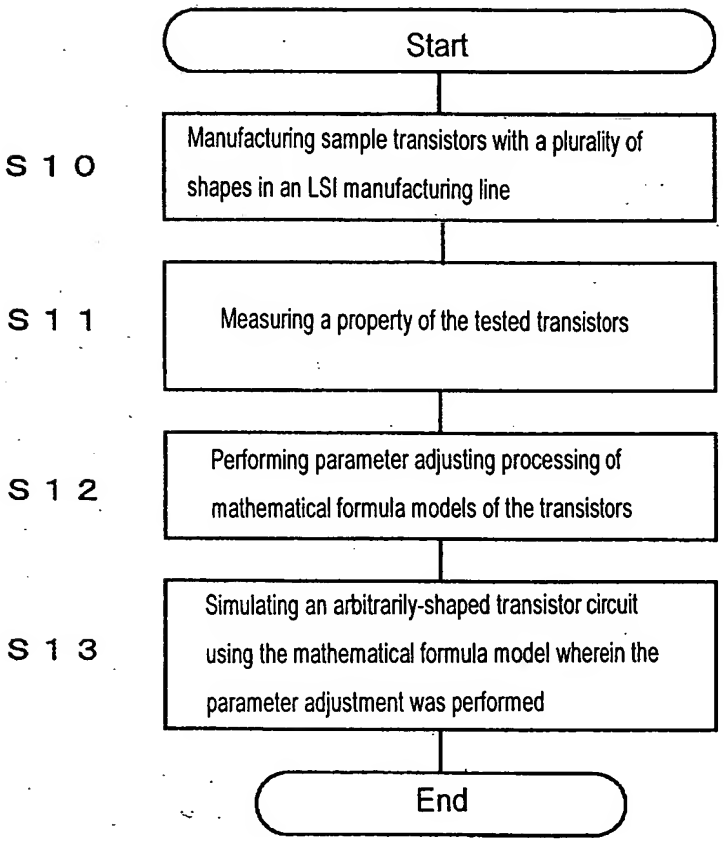
Start
S10
Manufacturing sample transistors with a plurality of shapes in an LSI manufacturing line
S11
Measuring a property of the tested transistors
S12
Performing parameter adjusting processing of mathematical formula models of the transistors
S13
Simulating an arbitrarily-shaped transistor circuit using the mathematical formula model wherein the parameter adjustment was performed
End

FIG. 2

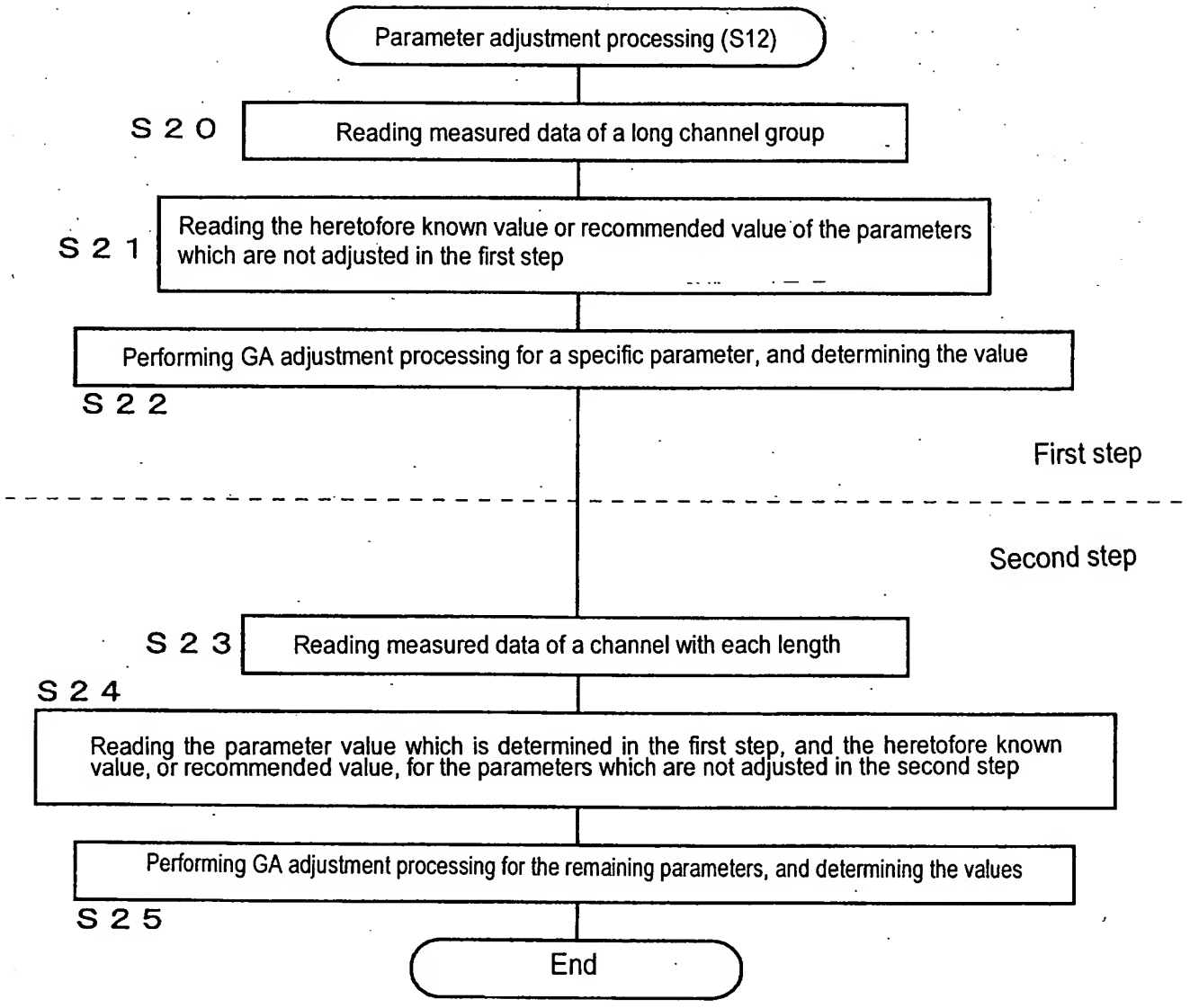
Parameter adjustment processing (S12)
S 2 0
Reading measured data of a long channel group
S 2 1
Reading the heretofore known value or recommended value of the parameters which are not adjusted in the first step
Performing GA adjustment processing for a specific parameter, and determining the value
S 2 2
First step
Second step
S 2 3
Reading measured data of a channel with each length
S 2 4
Reading the parameter value which is determined in the first step, and the heretofore known value, or recommended value, for the parameters which are not adjusted in the second step
Performing GA adjustment processing for the remaining parameters, and determining the values
S 2 5
End

FIG. 3

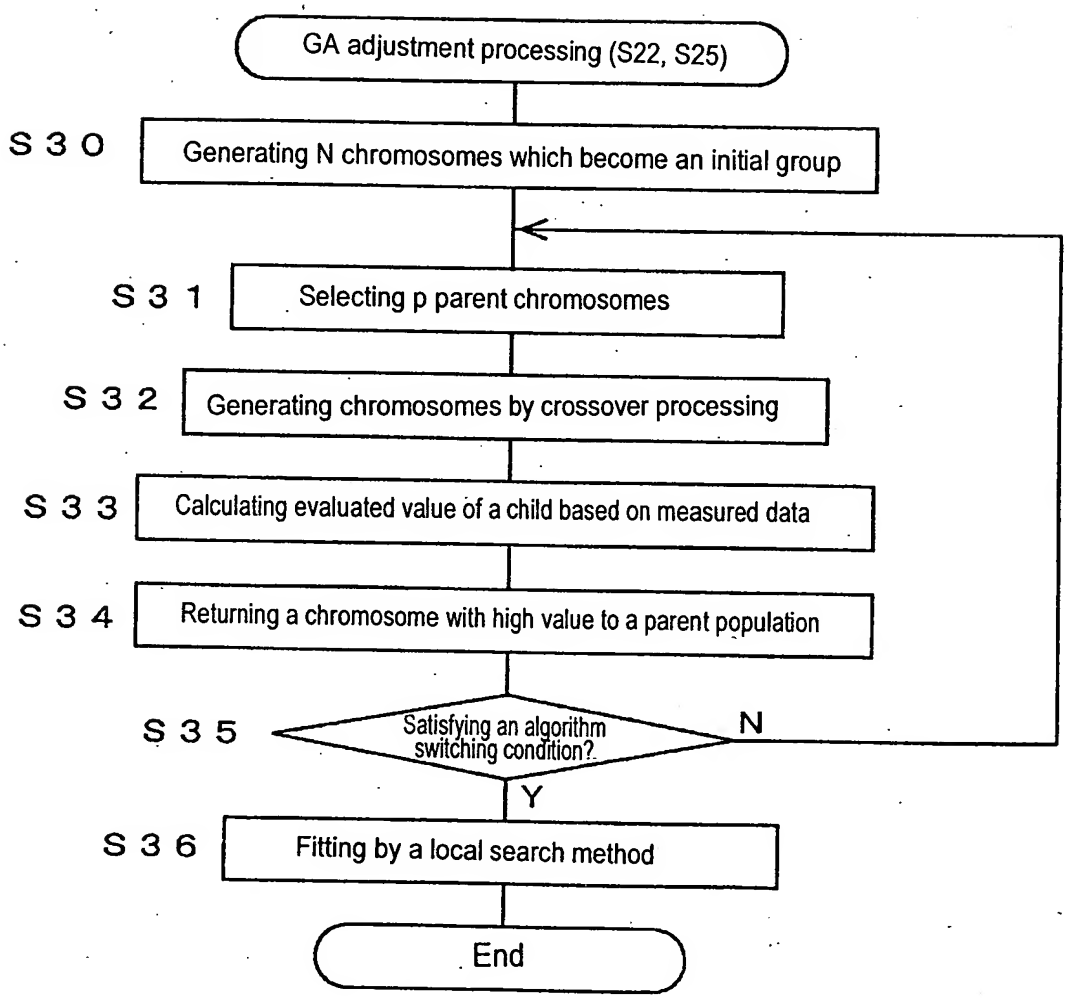
GA adjustment processing (S22, S25)
S30
Generating N chromosomes which become an initial group
S31
Selecting p parent chromosomes
S32
Generating chromosomes by crossover processing
S33
Calculating evaluated value of a child based on measured data
S34
Returning a chromosome with high value to a parent population
S35
Satisfying an algorithm switching condition?
N
Y
S36
Fitting by a local search method
End

FIG. 4

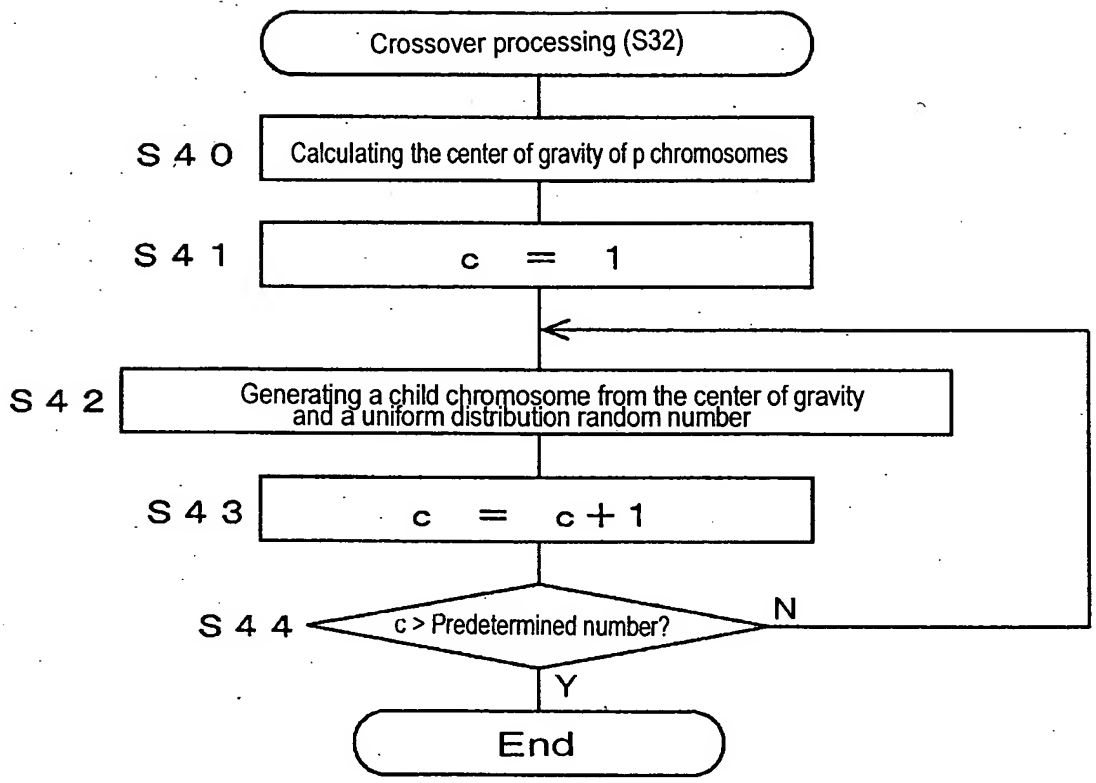
Crossover processing (S32)
S 4 0
Calculating the center of gravity of p chromosomes
S 4 1
c = 1
S 4 2
Generating a child chromosome from the center of gravity and a uniform distribution random number
S 4 3
c = c + 1
S 4 4
c > Predetermined number?
N
Y
End

FIG. 5

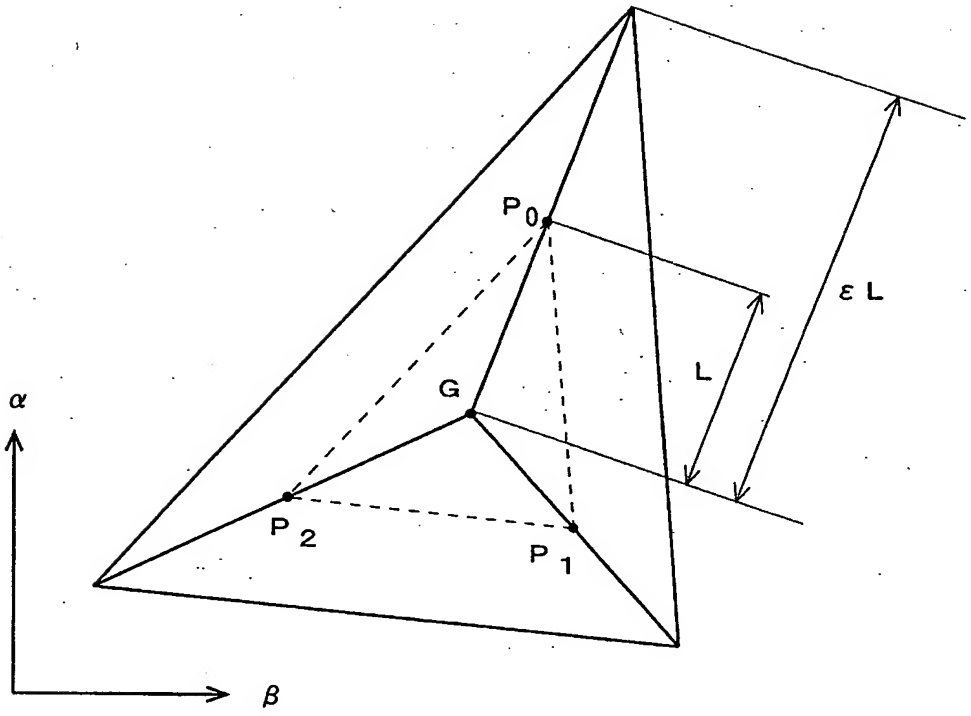

FIG. 6

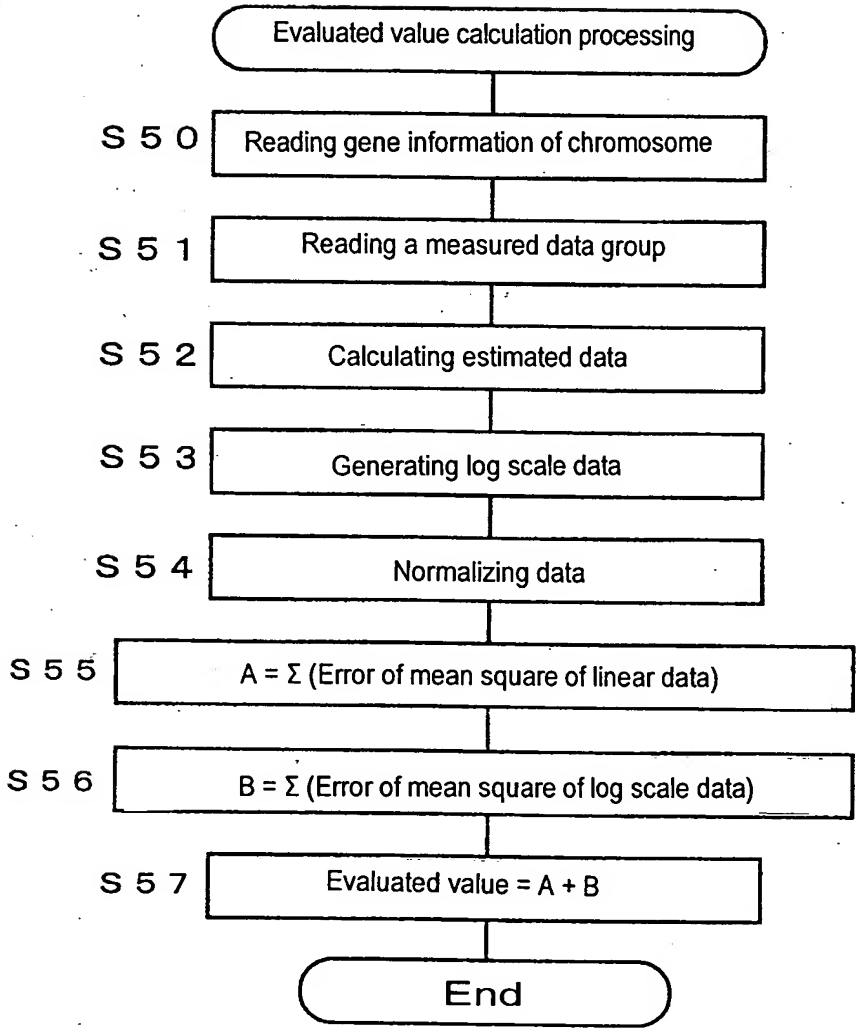
Evaluated value calculation processing
S 5 0
Reading gene information of chromosome
S 5 1
Reading a measured data group
S 5 2
Calculating estimated data
S 5 3
Generating log scale data
S 5 4
Normalizing data
S 5 5
A = Σ (Error of mean square of linear data)
S 5 6
B = Σ (Error of mean square of log scale data)
S 5 7
Evaluated value = A + B
End

FIG. 7

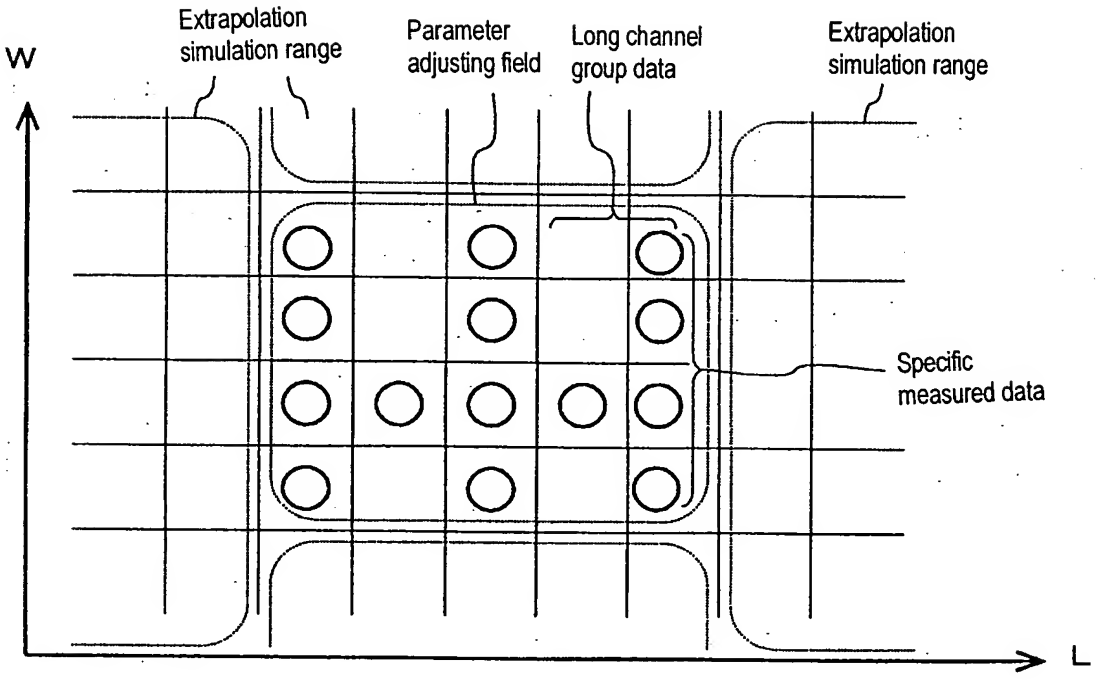
W
Extrapolation simulation range
Parameter adjusting field
Long channel group data
Extrapolation simulation range
Specific measured data
L

FIG. 8 (a)

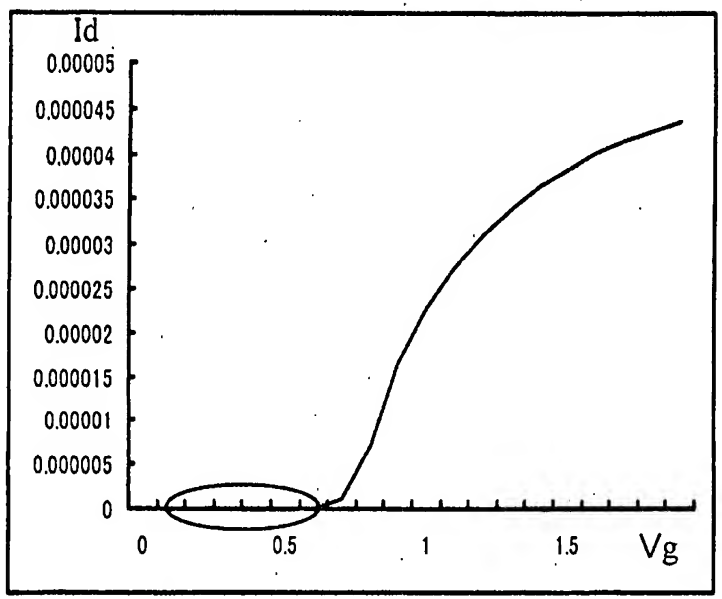
Id
0.00005
0.000045
0.00004
0.000035
0.00003
0.000025
0.00002
0.000015
0.00001
0.000005
0
0
0.5
1
1.5
Vg

FIG. 8 (b)

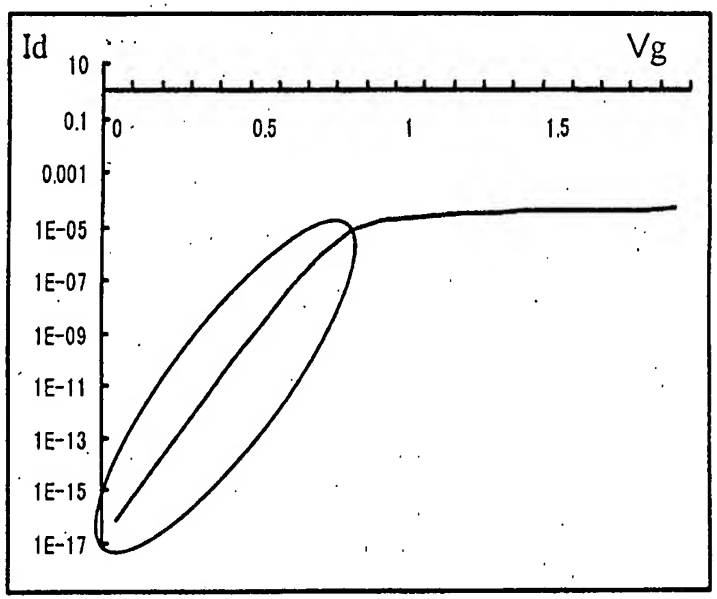
Id
10
0.1
0.001
1E-05
1E-07
1E-09
1E-11
1E-13
1E-15
1E-17
0
0.5
1
1.5
Vg

FIG. 9

Technological Parameters		
TOX	oxide thickness	m
XLD	gate-overlap length	m
XWD	gate-overlap width	m
XPOLYD	difference between gate-poly and design lengths	m
TPOLY	height of the gate poly-Si	m
RS	source-contact resistance	$VA^{-1}m$
RD	drain-contact resistance	$VA^{-1}m$
●NSUBC	substrate-impurity concentration	cm^{-3}
●NSUBP	maximum pocket concentration	cm^{-3}
●VFBC	flat-band voltage	V
LP	pocket penetration length	m
XQY	distance from drain junction to maximum electric field point	m

FIG. 10

Mobility		
VDS0	drain voltage for extracting the low-field mobility	V
●MUECB0	Coulomb scattering	$cm^2V^{-1}S^{-1}$
●MUECB1	Coulomb scattering	$cm^2V^{-1}S^{-1}$
MUEPH0	phonon scattering	$cm^2(Vs)^{-1}(V\ cm^{-1})^{MUEPH1}$
●MUEPH1	phonon scattering	—
MUETMP	temperature dependence of phonon scattering	—
MUESR0	surface-roughness scattering	$cm^2(V\ s)^{-1}(V\ cm^{-1})^{MUESR1}$
●MUESR1	surface-roughness scattering	—
NDEP	coeffcient of effective-electric field	—
NINV	coeffcient of effective-electric field	—
NINVD	modification of NINV	V^{-1}
BB	high-field-mobility degradation	—
●VMAX	maximum saturation velocity	$cm\ s^{-1}$
VOVER	velocity overshoot effect	cm^{VOVERP}
VOVERP	L_{gate} dependence of velocity overshoot	—
RPOCK1	resistance coefficient caused by the potential barrier	$V^2A^{-RPOCP1}\mu m^{1-RPOCP2}$
RPOCK2	resistance coefficient caused by the potential barrier	V
RPOCP1	resistance coefficient caused by the potential barrier	—
RPOCP2	resistance coefficient caused by the potential barrier	—